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THE PLANT DISEASE REPORTER

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Division of Mycology and Disease Survey

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THE PLANT DISEASE REPORTER

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THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

Vol. XXI Number 10

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Frank P. McWhorter contributes two brief notes on diseases of ornamentals in Oregon, page 188.

UNREPORTED POWDERY MILDEWS

Cecil E. Yarwood [1]

Collections of numerous powdery mildews in California revealed many which are believed to be new to the United States. In most of these cases perithecia were not found but the conidiophores were examined as an aid to identification. Conidiophores of the Erysiphaceae may be grouped into a few rather well defined types [2], though there is some intergradation between the types and some variation apparently due to environment. The three types represented in this report are shown in Figure 20. All specimens with conidiophores of the Erysiphe polygoni type showed clear evidence of a diurnal cycle of conidium formation and division of the generative cell [3]. Conidiophores of the other two types were not studied with respect to this point.

Powdery mildews were collected on the following hosts:

1. ACACIA CYCLOPS Cunn. On greenhouse seedlings. Conidiophores of Erysiphe polygoni type. Berkeley. Aug. 25, 1934.
2. ARMORACIA RUSTICANA Gaertn. (horse radish). Conidiophores of E. polygoni type. El Cerrito. Sept. 18, 1934.
3. BETA VULGARIS L. (sugar beet). Conidiophores of E. polygoni type. Clarksburg. Sept. 20, 1934.
4. BRASSICA OLERACEA var. BOTRYTIS L. (cauliflower). Conidiophores of E. polygoni type. Not found in field, but readily infected with cabbage mildew in greenhouse. Sept. 15, 1934.
5. CEANOTHUS SPINOSUS Nutt. (red-heart). All conidiophores infected with Cicinnobolus. Santa Barbara. March 4, 1936.
6. CENTAUREA CYANUS L. (cornflower). Conidiophores E. cichoracearum type. San Mateo. Aug. 21, 1934.
7. CENTAUREA MOSCHATA L. (sweet sultan). Conidiophores of E. cichoracearum type. Montara. July 31, 1934.
8. ERICA sp. (heath). Conidiophores of E. polygoni type. Salada Beach. Aug. 21, 1934.
9. ESCHSCHOLTZIA CALIFORNICA Cham. (California poppy). Conidiophores of E. polygoni type. Berkeley. July 21, 1934.
10. GERBERA sp. Conidiophores of E. cichoracearum type. Capitola. Nov. 21, 1935.

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[1] Many of the specimens recorded here were collected by Dr. M. W. Gardner, and several of the host species were identified by Miss E. K. Crum.

[2] Blumer, S. Die Erysiphaceen Mitteleuropas. 483 pp. Zurich 1933.

[3] Yarwood, C. E. The diurnal cycle of the powdery mildew Erysiphe polygoni. Jour. Agr. Res. 52:645-657, 1936.

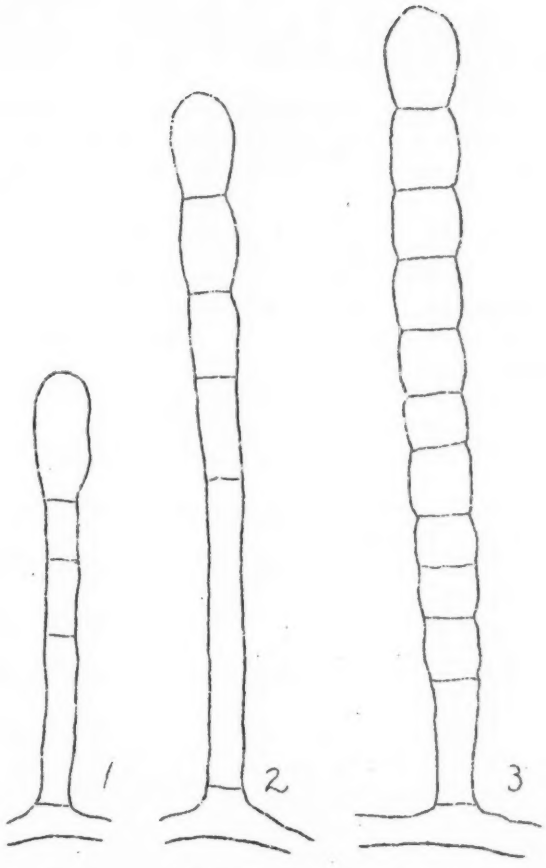

Figure 20. Three conidiophore types of powdery mildews, x 350: 1. Erysiphe polygoni type, drawn from specimen on Beta vulgaris 8 P. M. Sept. 20, 1934. 2. Erysiphe cichoracearum type, drawn from specimen on Solanum nigrum Sept. 22, 1936. 3. Podosphaera leucotricha type, drawn from specimen on Photinia serrulata April 26, 1936.

11. GRINDELIA ROBUSTA Nutt. (gum plant). All conidiophores infected with Cicinnobolus. Santa Barbara. March 4, 1936.
12. HEUCHERA sp. Conidiophores of E. cichoracearum type. Berkeley. Oct. 20, 1935.
13. IBERIS sp. (candytuft). Conidiophores of E. polygoni type. Montara. July 31, 1934.
14. IXERIS GRAMINEA (Fisch.) Nakai. Conidiophores of E. cichoracearum type. Greenhouse. Berkeley. Sept. 4, 1936.
15. LAMIUM AMPLEXICAULE L. (giraffe head). Conidiophores of E. cichoracearum type. San Pablo. Sept. 4, 1934.
16. LAYIA GLANDULOSA (Hook) H. and A. Conidiophores of E. cichoracearum type. Greenhouse. Berkeley. Nov. 10, 1934.

17. LINARIA MAROCCANA Hook. Conidiophores of E. cichoracearum type. Montara. July 31, 1934.
18. LONICERA HISIDULA Dougl. var. CALIFORNICA Jepson. (California honeysuckle). Conidiophores of E. polygoni type. Berkeley. Oct. 21, 1934.
19. MADIA SATIVA Molina. (tarweed). Conidiophores of E. cichoracearum type. Montara. July 31, 1934.
20. MALVA BOREALIS Wallm. (bull mallow). Conidiophores of E. cichoracearum type. Berkeley. Oct. 18, 1934.
21. MELILOTUS INDICA All. (yellow sweet clover). Conidiophores of E. polygoni type. Greenhouse. Berkeley. Nov. 6, 1935.
22. MIMULUS GUTTATUS D. C. (monkey flower). Conidiophores of E. cichoracearum type. Colma. Oct. 29, 1936.
23. PENSTEMON HETEROPHYLLUS Lindl. All conidiophores infected with Cicinnobolus. Santa Barbara. March 4, 1936.
24. PHOTINIA SERRULATA Lindl. Conidiophores of Podosphaera leucotricha type. Berkeley. April 26, 1936.
25. PHOTINIA GLABRA. Conidiophores of Podosphaera leucotricha type. San Francisco. Aug. 13, 1934.
26. PICRIS ECHIOIDES L. (bristly oxtongue). Conidiophores of E. cichoracearum type. El Cerrito. Sept. 18, 1934.
27. PLANTAGO MARITIMA L. (goose-tongue). Conidiophores of E. cichoracearum type. Franklin Point. Oct. 13, 1935.
28. ROBINIA PSEUDOACACIA L. (black locust). Conidiophores of E. polygoni type. Mt. Eden. Oct. 1, 1935.
29. SALVIA LEUCOPHYLLA Greene (purple sage). Conidiophores of E. cichoracearum type. Santa Barbara. March 4, 1936.
30. SOLANUM NIGRUM L. (black nightshade). Conidiophores of E. cichoracearum type. Corralitos. Oct. 31, 1935.
31. URTICA sp. Conidiophores of E. cichoracearum type. Salinas. Aug. 2, 1934. (Division of Plant Pathology, University of Califomia).

DOWNY MILDEW AND BACTERIAL LEAF SPOTS OF TOBACCO IN KENTUCKY

E. M. Johnson reported as follows on May 21: "Dr. Valleau reported the finding of downy mildew (Peronospora tabacina) near Guthrie in Todd County on May 13 by County Agent Brabant (P.D.R. 21:171. May 15, 1937). County Agent Hill of Logan County received the first specimens of downy mildew on May 19. On an inspection trip May 20 and 21 in Todd and Logan Counties, downy mildew was found in Burley, One Sucker, and dark fire-cured tobacco beds on 20 farms. The disease was more prevalent in the southern halves of these Counties especially near Adairville and Olmstead in Logan County. County Agents Hill and Brabant received and identified specimens from several farms not visited. In most beds the plants were ready to transplant. It is too soon to estimate the amount of damage but

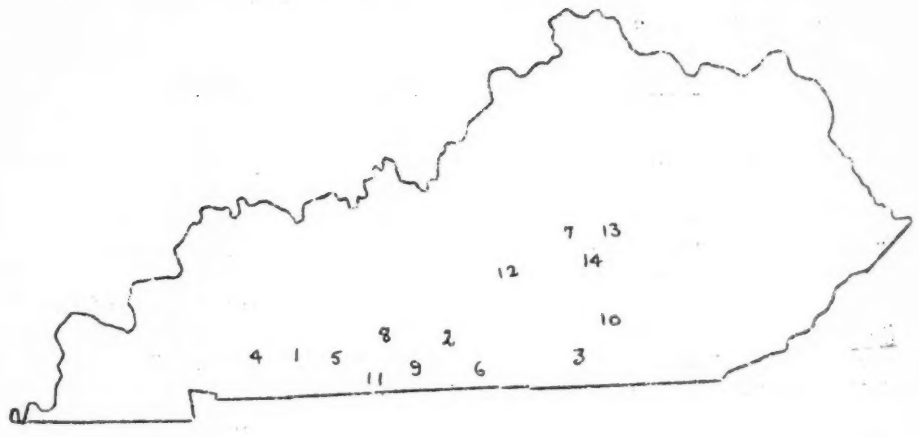

Figure 21. Location of counties in Kentucky in which downy mildew of tobacco has been found up to May 26 according to W. D. Valleau (see text).

so far it does not seem to be very great except in a few cases.

"Rain fell almost every day throughout April and the first half of May. The last rain in this area occurred on May 12. Temperatures have been low for the season especially at night until May 20. A week of sunshine seems to have been helpful in preventing spread because in most beds seen there has been little spread from a few infected areas per bed.

"Wildfire (Bacterium tabacum) and angular leaf spot (B. angulatum) are prevalent in Burley, One Sucker, and dark fire-cured tobacco beds in Todd, Logan, and Christian counties. Both wildfire and angular leaf spot have caused much damage and in many instances have killed extensive areas in beds of these three types of tobacco. Burley plants have been damaged more than the dark types. The yellowing of the growing points of plants affected with wildfire due to translocation of the wildfire toxin is common this season."

In a later report W. D. Valleau states (May 26): "Wildfire is prevalent in the southern tier of counties in western Kentucky and is causing considerable injury to plants in the bed. Angular leaf spot is prevalent in the Burley area, with some wildfire, and is spotting the plants badly, but they will grow out of it.

"Downy mildew has been found up to May 26 in 14 counties (See Fig. 21). It is entering the counties at about the time when the plants are ready to set and probably will not reduce the acreage.

"The dates when the disease was first observed in the various counties are as follows:

Date May		County	Date May		County
14	1	Todd	22	8	Warren
17	2	Barren (no specimen)	22	9	Allen
			22	10	Pulaski
18	3	Wayne	24	11	Simpson (in many beds)
20	4	Christian			
20	5	Logan (in many beds)	24	12	Taylor
			25	13	Garrard (in 2 separate beds)
21	6	Monroe			
21	7	Boyle	26	14	Lincoln"

(Kentucky Agricultural Experiment Station).

DOWNY MILDEW DEVELOPMENT ON TOBACCO IN NORTH CAROLINA AND VIRGINIA, APRIL 20 TO MAY 15

Paul R. Miller

Downy mildew has spread over all the tobacco-growing area of North Carolina and Virginia. It was severe locally but on the whole the mortality of plants was not nearly so high as in Georgia.

Evidence seems to be accumulating to substantiate the statement that "The amount of damage caused by downy mildew (Peronospora tabacina) to tobacco plants in a given locality seems to be closely related to earliness of the first signs of infection" (P.D.R. 21:130, May 1, 1937). To illustrate: For the past few years one area in Craven County, North Carolina (eastern flue-cured belt) has furnished plants for surrounding localities during mildew epidemics. This year mildew was observed here around March 10, about three weeks earlier than it usually appears, and the mortality of plants in this region was about as great as in Georgia. Counts showed more dead plants per square foot than in any other area observed in North Carolina.

Mildew was observed in the old belt of North Carolina April 27 and 28 as far west as Wilkesboro and Boone near the mountains. When we crossed the mountains, a distance of less than fifty miles, and looked for mildew in the Burley section of east Tennessee, we did not find it, even though its occurrence had been reported in the press. It seems probable that the spores do not cross the mountains, as the prevailing winds at this time of the year are not in that direction, but enter rather from Georgia. In 1933 when mildew was first observed in Tennessee it was found near the Georgia

line first and did not appear in east Tennessee until about three weeks later. The speed of its dissemination, determined by traveling along and examining beds for the first appearance of symptoms, was about 35 miles a day.

About May 5 mildew made its appearance in Pittsylvania and Halifax Counties in the Virginia flue-cured belt. Generally speaking the stands were irregular in this section and it was rather difficult to estimate the mortality of plants by using the stand count method. Approximately May 10 it was developing on the beds in Prince Edward and Nottaway Counties of the Virginia fire-cured belt. It was interesting to note that on the 11th and 12th there was active and extensive spread throughout this region even though dry and reasonably hot weather prevailed. The general appearance of symptoms on the fire-cured plants seems to be slightly different than that of those on the flue-cured plants. In the former case there is some discoloration in the stalk and more of the leaf tissue seems to be involved which makes the damage more apparent.

On May 13 and 14 about 10 percent of the beds observed in the sun-cured belt near Richmond were showing traces of mildew infection.

It is too early to tell the ultimate effect of the disease on the planned total crop in Virginia, but it seems likely now that the damage will be greater than in any preceeding year, just as it has been, apparently, in Florida, Georgia, South Carolina, and North Carolina.

After two months of observing tobacco plants one becomes convinced that all tobacco growers should be specifically instructed as to the judicious use of nitrate of soda on diseased plants. Admittedly downy mildew has been very severe this year, but there were numerous beds scattered throughout the tobacco-growing area that probably were damaged as much or more from the improper application of sodium nitrate than from the disease. (Division of Mycology and Disease Survey).

FRUIT DISEASE SITUATION IN ILLINOIS

Kenneth J. Kadow

Although excellent weather has prevailed for apple scab (Venturia inaequalis) throughout the State, there are very few instances where the disease is of commercial concern. This fact is due, in part, to the small carryover of infected leaves and also to the frequency of early spring showers. Most of the ascospores were mature by the middle of March in southern Illinois and the first of April at Urbana. In most parts of the state ascospore discharge was practically complete before any susceptible host tissue was exposed, thereby further depleting an already limited supply of primary inoculum.

Brown rot (Sclerotinia fructicola) has caused considerable blossom and twig cankers on peach in scattered localities of the various peach growing sections of this State. Die-back, caused by Valsa leucostoma, is, however, more general and more serious. Aside from killing twigs and branches, it was found girdling the trunks of about 80 percent of the trees in a 100-acre 5-year old peach orchard. The fungus seems to have invaded the trunk without the aid of wounds. It is very evident, judging from the size of the 5-year old trees, that the orchard was poorly kept and that the trees were not in a vigorous condition. The severe winter of 1935 and last year's drought had not visibly marked the wood, but both undoubtedly contributed to the generally low state of tree vigor. Aside from this orchard, neither brown rot nor die-back are, at the present time, causing losses of commercial concern.

Raspberry anthracnose (Elsinoe veneta) is generally present throughout the state as leaf spot. Most growers have not sprayed, but those who have applied the delayed dormant application have the disease under control. (Illinois Agricultural Experiment Station, May 18).

FRUIT DISEASES IN MISSOURI

M. A. Smith

The maturation of perithecia of Venturia inaequalis in overwintered material was extremely slow during January, February, March, and April, 1937. On April 22 90 percent of the perithecia examined contained less than 5 percent colored spores. On April 29 there was some further increase in mature ascospores but the counts on this date showed only 10 percent colored ascospores. Fewer perithecia have been observed in material examined this last winter than during a similar period for the last six years.

A light ascospore discharge occurred on May 5. Primary scab infection was observed on apple foliage in southeastern Missouri during the week May 3-8. Primary scab infection was first observed on apple foliage in the Missouri Ozarks on May 11.

Pear leaf spot (Fabraea maculata) infection had become well established in several pear orchards near Springfield, Missouri by May 11.

Leaf curl (Taphrina deformans) infection appeared to be general on seedling and non-sprayed budded peaches in the vicinity of Marionville, Missouri, on May 10. On some trees 90 percent of the foliage was affected. (Cooperative work between Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, and the Missouri Agricultural Experiment Station).

PLANT DISEASES IN KENTUCKY IN 1937

W. D. Valleau

Peach leaf curl is severe in the southwestern counties. Conditions are ideal for its development about Lexington but unsprayed trees have practically none of it. Could the severe drouth and heat of last summer have been a factor in reducing it?

Ascospores of the apple scab fungus were mature at the early bud stage, but unsprayed trees in the vicinity of Lexington do not have an unusual amount of it and it appeared rather late in spite of much rain. The York variety in Estill County has been reported highly resistant to scab for several years.

Blight (Bacillus amylovorus) of apples and pears is very general over the State, and very destructive. This is the first outbreak for several years.

Alfalfa sowed last fall is reported to be completely destroyed by Sclerotinia trifoliorum in several parts of the State. Black stem of alfalfa (Phoma medicaginis) has caused extensive injury this year, killing weak-growing plants and small shoots and causing much injury to more vigorous shoots by decay on the first 3 or 4 inches of stem next to the ground. About the usual amount of red clover was killed by Sclerotinia trifoliorum during the winter. There is not much leaf rust on wheat or barley so far.

Sycamore blight (Gnomonia veneta) is severe over most of the State. Many trees are nearly completely defoliated. A burr oak tree growing under a sycamore had only large leaf spots but no twig injury. (Kentucky Agricultural Experiment Station, May 25).

PLANT DISEASES REPORTED FROM ARKANSAS

V. H. Young

Taphrina on Acer saccharum is relatively rare this year. We first noticed it in 1935 when it was really destructive. At that time the late Dr. J. J. Davis identified the organism as Taphrina polyspora (Sorok.) Johans. with the remark that it was more like var. pseudoplatani Massal. than the type.

Taphrina deformans is very general on peaches this year but seldom in serious amounts. Taphrina coerulescens has been noted in small amounts on what I take to be ordinary red oak, and Taphrina mirabilis on one of the wild plums has been received from Hope, Arkansas. Taphrina on sumac which was very abundant in 1935 has not been seen but is no doubt present.

The plant disease situation in general has developed no very serious outbreaks this year. A few weeks ago there were a few reports of downy mildew (Peronospora effusa) on spinach but it was apparently only serious locally.

Cotton stands are poor in parts of eastern Arkansas and there is considerable replanting. This is correlated with unusually cool, wet weather in late April and early May. Reports indicate that 2 percent Ceresan has improved stands of early planted cotton when used.

Observations all over the State indicate that oat smut (Ustilago spp.) is present but generally not in excessive amounts even when no treatments have been made. Oat smut for some reason seems much more serious in northwestern Arkansas than anywhere else in the State. Counts on two unusually badly smutted fields of Fulghum oats near Fayetteville gave 48.2 and 59.7 percent of smutted heads respectively. No other plantings which anywhere nearly approached these two have been seen. Most of the smut on oats appears to be caused by U. avenae but microscopic determination was not made.

Both loose (U. nuda) and covered smut (U. hordei) of barley have been noted in moderate amounts and loose smut (U. tritici) of wheat has been seen only in small amounts. No bunt (Tilletia sp.) has been noted. Ordinarily it has not been present in more than traces.

As yet no serious disease situation has developed on apples or grapes. Apple scab is scarce. While the rust on hawthorne (apparently mostly Gymnosporangium globosum and G. clavipes) is very prevalent, only scattered spots on apple leaves have been seen as yet. No serious outbreak is expected.

Black rot (Guignardia bidwellii) has been noted at an unusually early date on wild grapes but has not been seen in vineyards as yet.

Blossom blight of early peaches caused by Sclerotinia fructicola has been reported as being very severe. (Arkansas Agricultural Experiment Station, May 21).

NOTES ON DISEASES OF ORNAMENTALS IN OREGON

Frank P. McWhorter

There has not been a commercially important outbreak of the blight of narcissus caused by Ramularia vallisumbrosae for two years. This year a specimen was sent in by a grower from an Oregon coast location. Apparently the disease became noticeable during April.

On April 28 I visited some of the large plantings of peonies in the Milton-Freewater district. There are several of these plantings, totalling about 10 acres, where peonies are grown partly for plants and partly for cut flowers. The ordinary leaf spots so common on the west side of the Cascades were completely absent. Some varieties showed a minor infestation of the root-knot nematode (Heterodera marioni). The general average of growth is far superior to that attained in the moist climate of western Oregon. (Division of Fruit and Vegetable Crops and Diseases).